State of New Jersey
Department of Environmental Protection

5-Year Progress Report for the State Implementation Plan (SIP) For Regional Haze

Final

Appendix B: Public Participation and Response to Comments

June, 2016

Response to Comments on the Proposed 5-year Progress Report for the New Jersey Regional Haze State Implementation Plan Revision and Documentation on the Public Process to Solicit Comments on the Report

The New Jersey Department of Environmental Protection (the Department) issued a report entitled "The Proposed 5-year Progress Report for the New Jersey Regional Haze State Implementation Plan" on December 17, 2015. The United States Environmental Protection Agency's Regional Haze Rule at 40 CFR § 51.308(g) requires each state to submit a report to the USEPA every five years. This report must evaluate progress towards the reasonable visibility progress goal for each mandatory Class I Federal area located within the state and each mandatory Class I Federal area located outside the state that may be affected by emissions from within the state. These progress reports must be in the form of State Implementation Plan (SIP) revisions and must comply with the procedural requirements of 40 CFR § 51.102 and § 51.103. New Jersey has a mandatory Class I Federal area located in the state - the Brigantine Wilderness Area within the Edwin B. Forsythe National Wildlife Refuge, under the control of the U.S. Fish and Wildlife Service.

Requirements to Solicit Public Comment

The Department's proposed 5-year Regional Haze Progress Report was distributed to all interested parties by e-mail notice, including MANE-VU state members, neighboring states, all persons requesting notification of Department actions in air pollution control, the regional air planning agencies of MARAMA, NESCAUM, and OTC, and Federal agencies including the U.S. Environmental Protection Agency (USEPA), the U.S. Department of Agriculture's Forestry Service (USFS), the U.S. Fish and Wildlife Service (USFWS), and the Department of the Interior's National Park Service (USNPS). A copy of the proposed progress report was posted on the Department's website at http://www.nj.gov/dep/baqp/sip/siprevs.htm along with a notice requesting comment on the report.

The Department made a draft of this report available to USFWS and offered them the opportunity for consultation on this report 60 days prior to offering to hold a public hearing on this report in compliance with 40 CFR § 51.308(i)(2). The Department offered to hold a public hearing on this report if one was requested by any member of the public. Since no request to hold a hearing was received, no public hearing on the report was held. The written comment period ended on March 19, 2016.

Public Comments Received on This Report

The Department received four sets of comments on the report. The commenters were USFS, USNPS, USEPA and the Commonwealth of Pennsylvania's Department of Environmental Protection (PADEP). PADEP submitted comments past the comment deadline but those comments were still accepted and are addressed in this response. The responses to all comments received are as follows:

Comment 1: Please clarify an apparent contradiction in the 5-Year Progress report, on page 10. The sentence "Improvements in total light extinction on both the haziest worst and cleanest best days resulted from reductions in light extinction from all four of the major visibility-impairing pollutant species: sulfates, nitrates, particulate organic matter, and elemental carbon" seems to contradict Table 2.1 when comparing baseline years 2000 - 2004 with the most recent years 2009-2013. (Nitrate 15.7 Mm^{-1} in 2000-2004, 12.2 Mm^{-1} in 2005-2009, 15.6 Mm^{-1} in 2008-2012, and 16.1 Mm^{-1} in 2009-2013). (USFS)

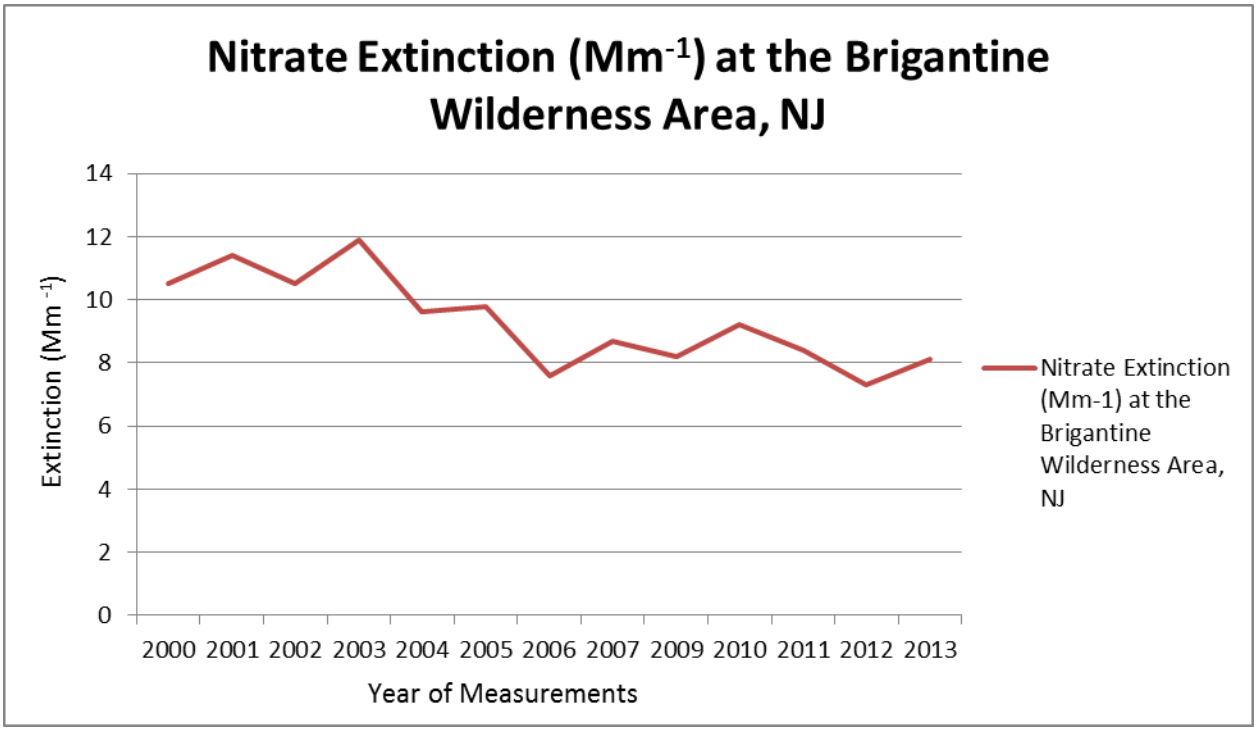
Response 1: Table 2.1 does show increasing nitrate levels occurring on days of worst visibility levels, a subset of the total data collected during the year, used to calculate the five year averages of the 20% worst visibility level days. The five year average on the 20% worst visibility level days was heavily influenced by the ammonium nitrate extinction value collected in 2010 (20.3 Mn^{-1}), which was the highest level of visibility impairment recorded since 2000. However, the annual average nitrate levels for individual years (from the total of all samples collected in a year), indicate a decreasing annual average nitrate light extinction. The data available from the IMPROVE network was used to prepare the table below (http://vista.cira.colostate.edu/improve/) showing a downward trend in the annual average nitrate light extinction levels at Brigantine for each year since 2000.

Table B-1:
Average Annual Nitrate Extinction (Mn^{-1}) Since 2000 at the Brigantine Wilderness Area

Year	Nitrate Extinction (Mm^{-1})
2000	10.5
2001	11.4
2002	10.5
2003	11.8
2004	9.6
2005	9.8
2006	7.6
2007	8.7
2008	No data available
2009	8.2
2010	9.2
2011	8.4
2012	7.3
2013	8.1

The trends shown in Graph B-2 below indicate a decreasing trend in the light extinction from nitrate since the year 2000.

Graph B-2: Trends in Nitrate Extinction at the Brigantine Wilderness Area



While the drop in the amounts of nitrates observed at the Brigantine Wilderness Area has not been as drastic as those in sulfates, there appears to be a downward trend in nitrates as stated in the report. This observation was also seen at other MANE-VU Class I areas. A report (Tracking Visibility Progress 2004-2011, prepared by NESCAUM for the Mid-Atlantic/Northeast Visibility Union (MANE-VU)), available at http://www.nescaum.org/documents/manevu-trends-2004-2011-report-final-20130430.pdf) states that all MANE-VU sites have shown improved visibility levels in MANE-VU's Class I areas. It states that "The trends are mainly driven by large reductions in sulfate light extinction, and to a lesser extent, nitrate light extinction." A note was added for clarification purposes to the 5-year progress report to cross-reference this answer.

Comment 2: On page 15, it is stated, "As shown in Table 3.1, the sulfur dioxide emission reductions at the four stacks provide more reductions than expected by 2018 to meet the progress goal at Brigantine." It will be important to continue to monitor the Best Available Retrofit Technology eligible sources to ensure future emissions meet, or exceed the goals, as listed in Table 3.1 of the report. (USFS)

Response 2: The BART-eligible sources located within New Jersey are required by their air pollution control permits to operate their sulfur dioxide air pollution control apparatus (i.e.; scrubbers) whenever they operate their coal fired electric generating units. Emission reductions at these facilities are expected to continue in the future and will not backslide. The Department monitors these New Jersey sources, and requires annual reporting of emissions, to ensure that emission increases outside the scope of their air pollution permits do not occur.

Comment 3: On page 17, it is stated, "New Jersey has met the requirements for the Low Sulfur Fuel Oil Strategy to meet the 2018 reasonable progress goal for the Brigantine Wilderness Area. On October 25, 2010, New Jersey adopted rules to modify the sulfur in fuels limits in accordance with the definition of reasonable measures needed to meet this goal. The New Jersey rule (N.J.A.C. 7:27-9 et seq.) lowered the sulfur content of all distillate fuel oils (#2 fuel oil and lighter) to 500 ppm beginning on July 1, 2015 and to 15 ppm beginning on July 1, 2016." We are pleased that New Jersey will meet the 2016 Mid-Atlantic/Northeast Visibility Union Low Sulfur Fuel Oil Strategy goal. (USFS)

Response 3: Thank you for your comment. The sulfur content of all distillate fuel oils sold for use in New Jersey is anticipated to be lowered to 15 parts per million by July 1, 2016.

Comment 4: On page 50, it is stated, "New Jersey provided the Federal Land Managers at U.S. Fish and Wildlife Service an opportunity for consultation, in person and at least 60 days before holding any public hearing on this progress report. An outline of the consultation process follows." Please add the USDA Forest Service to all notification lists, as the USDA Forest Service is also a Federal Land Manager. Please also add the U.S. National Park Service to the list of Federal Land managers that NJDEP provided an opportunity for consultation in Section 9.2 on page 50. (USNPS, USFS)

Response 4: Both the United States Department of Agriculture's Forest Service and the United States National Park Service have been added to the notification list and will be notified of all future actions concerning visibility protection and New Jersey's Regional Haze SIP.

Comment 5: Since emissions from New Jersey affect visibility at Class I areas outside New Jersey, what about including data from other Class I areas affected by New Jersey? (USEPA)

Response 5: Table B-2 below demonstrates the visibility trends at all other MANE-VU Class I areas. This information can be found on the IMPROVE website. The progress report was updated to include this data (http://views.cira.colostate.edu/fed/DataWizard/Default.aspx).

Table B-2: Observed Visibility vs. Reasonable Progress Goals (All values in deciviews)

Class I Area IMPROVE* Site	2000-2004 5-Year Average	2009-2013 5-Year Average		2018 Reasonable Progress Goal
20% Worst				
Acadia National Park	22.9	17.9		19.4
Moosehorn Wilderness Area**	21.7	16.8		19.0
Great Gulf Wilderness Area***	22.8	16.7		19.1
Lye Brook Wilderness Area	24.4	18.8		20.9
Brigantine Wilderness Area	29.0	23.8		25.1
20% Best				
Acadia National Park	8.8	7.0		8.8
Moosehorn Wilderness Area	9.2	6.7		9.2
Great Gulf Wilderness Area	7.7	5.9		7.7
Lye Brook Wilderness Area	6.4	4.9		6.4
Brigantine Wilderness Area	14.3	12.3		14.3

* IMPROVE = Interagency Monitoring of Protected Visual Environments program.
** The IMPROVE monitor for Moosehorn Wilderness also represents Roosevelt Campobello International Park.
*** The IMPROVE monitor for Great Gulf Wilderness also represents Presidential Range - Dry River Wilderness Area.

Comment 6: Could you explain the numbers in Table 7.1 and how the changes in emissions were calculated? (USEPA)

Response 6: The report has been updated to explain how the numbers in the table were calculated. The explanation is as follows:

1. "Total 2002 State SO_2 TPY from listed 167 stacks" represents the sum total SO_2 emissions in tons per year (tpy) from all the units included in the listed 167 stacks for each state.
2. "90% requested SO_2 TPY total reduction based on "Ask" represents the total SO_2 emissions in tons per year requested from each state to satisfy the EGU "Ask." The EGU "Ask" requested a 90% SO_2 emissions reduction from 2002 emissions at each of the identified 167 EGU stacks. This was calculated by multiplying the total 2002 state SO_2 emissions from the listed 167 stacks by 0.9 (for a 90% reduction).
3. The title on the Table 7.1 called "Total CAMD SO_2 TPY achieved reduction 2002-2013" has been changed to "Total CAMD SO_2 TPY achieved reduction 2002-2013 (all EGUs)" and represents the total SO_2 emission reductions achieved at all the EGUs in the state between 2002 and 2013 based on Clean Air Markets Division (CAMD) data. This was calculated by finding the sum of the emission reductions between 2002 and 2013 from all the EGU's in the state.

4. "Statewide SO_2 % change relative to "Ask" amount" shows the percent change in the total statewide SO_2 emissions reduction from all EGUs relative to the amount requested by the EGU "Ask." This was calculated by finding the percent change between the requested 90% SO_2 reduction from the 167 stacks and the actual reduction between 2002 and 2013 from all the EGUs in the state.

Comment 7: The Executive Summary states that New Jersey's Regional Haze SIP is adequate for continued reasonable progress towards achieving natural conditions by 2018 in Brigantine and all mandatory Class I Federal areas impacted by emissions from New Jersey. The statement should be modified to eliminate the interpretation that natural conditions could be achieved by 2018 (instead of 2064). (USEPA)

Response 7: The statement has been modified to reflect that New Jersey's Regional Haze SIP is adequate for making continued reasonable progress to achieve the first progress goal in 2018.

Comment 8: In the report, PSD could be its own section (e.g., 6.3) and not combined with Agricultural and Forestry Smoke Management. (USEPA)

Response 8: The new section 6.3, Prevention of Significant Deterioration (PSD), was added to the report.

Comment 9: Please include the U.S. National Park Service in the Acronyms and Abbreviations table on page vii. (USNPS)

Response 9: The U.S. National Park Service and the U.S. Forestry Service were added to the list of acronyms and abbreviations in the report.

Comment 10: In Table 7.3 on page 35, it states that Pennsylvania has a "Residual – Rule or Statute in place," but the narrative concludes that Pennsylvania has only partially met MANE-VU's low sulfur fuel strategy. Please clarify Pennsylvania's residual rule or statute, or correct the table to reflect that no rule exists at this time. (USNPS)

Response 10: Pennsylvania's adopted sulfur-in-fuel rule only reduces the sulfur content of distillate fuel oil in Pennsylvania to 500 ppm. The MANE-VU "Ask" requested that the sulfur content of distillate fuel oil be lowered to 15 ppm. As the sulfur content of distillate fuel oil will not be lowered to 15 ppm, Pennsylvania has only partially met the MANE-VU low sulfur fuel strategy. Pennsylvania did adopt a rule that lowers the sulfur content of No. 4 fuel oil to 2,500 ppm and residual fuel oil to 5,000 ppm, which conforms to the levels in the MANE-VU "Ask."

Comment 11: The Pennsylvania Environmental Quality Review Board amended regulations at 25 Pa. Code § 123.22 to reduce SO_2 emissions from home heating oil and commercial fuel oils, beginning on July 1, 2016. The lower sulfur limits were included in an approved Pennsylvania SIP revision that EPA says secured an additional 23,051 tons in SO_2 reductions not anticipated at the time of the MANE-VU "Ask" and that these reductions supplement those that would have occurred if Pennsylvania had lowered the sulfur content of distillate fuel oil to 15 ppm. The EPA stated that a 15 ppm limit on distillate oil is no longer "appropriate and necessary" to achieve the goals of the MANE-VU "Ask" (79 FR 39331). (PADEP)

Response 11: While the USEPA has accepted additional SO_2 emission reductions made at the Portland Power Plant in Pennsylvania in lieu of reductions made from lowering the sulfur content of distillate fuel oil to 15 ppm, this substitution of emissions from other sources was not an option contained in the MANE-VU "Ask." The MANE-VU resolution clearly did not allow for substitution of emissions in lieu of a lower sulfur fuel strategy (see Comment 12 also) and the USEPA incorrectly allowed for this substitution of emissions when it approved Pennsylvania's SIP. Since the majority of the MANE-VU states met the MANE-VU "Ask" by adopting a 15 ppm sulfur-in-fuel level for distillate oil, Pennsylvania should consider that the 15 ppm sulfur-in-fuel level is reasonable for them as well.

The lowering of the sulfur content of distillate fuel oil to 15 ppm is a "reasonable" control measure as determined through the review of reasonable control measures required by the Federal Regional Haze rule at 40 CFR **§** 51.308 (d)(1)(A). This section of the Federal rule requires an analysis of control measures based upon the costs of compliance, the time necessary for compliance, the energy and non-air quality environmental impacts, and the remaining useful life of any potentially affected sources. Most MANE-VU states, and a NESCAUM report on the viability of ultra-low sulfur fuel oil, have found that lowering the sulfur content of distillate fuel oil to 15 ppm is "reasonable" based on this 4-factor analysis. New Jersey had also determined through a regional photochemical modeling analysis that the visibility progress goal for the Brigantine Wilderness Area would be met if every MANE-VU state, including Pennsylvania, lowered the sulfur content of distillate fuel oil to 15 ppm by the year 2018. Additional reductions in emissions will not only enable New Jersey to make the first visibility progress goal in 2018, but will continue the progress required by the Clean Air Act to achieve the visibility levels in 2064 that are absent of all manmade visibility impairment.

Comment 12: The low sulfur fuel oil strategy of the MANE-VU "Ask" has been adopted in Pennsylvania "as appropriate and necessary," in order to assure reasonable progress toward preventing any future, and remedying any existing, impairment of visibility in mandatory Class I Federal areas within MANE-VU. Therefore, based on emission reductions that will result from Pennsylvania's low-sulfur fuel regulations, in combination with the substantial decline in SO_2 emissions from other sectors including the EGU sector, Pennsylvania has satisfied the commitment to adopt a low-sulfur fuel strategy, "as appropriate and necessary." (PADEP)

Response 12: New Jersey disagrees with this comment. While the Commonwealth of Pennsylvania's sulfur-in-fuel rule will result in a lower level of sulfur in distillate oil, this level was not as low as the sulfur-in-fuels level that was used by other MANE-VU states in establishing goals that provide for reasonable progress towards achieving natural visibility conditions within the Class I areas, not just by 2018 but, ultimately, to the 2064 natural visibility levels.

While other reductions in visibility impairing pollutants have been made in Pennsylvania, they have been made because of other Federal and state Clean Air Act requirements, like New Jersey's action under Section 126 of the Clean Air Act to seek the reductions at Pennsylvania's Portland Power Plant. These reductions are unrelated to the MANE-VU "Ask" and may result in double counting by claiming the reduction through two different control strategies. While there is a statement in the MANE-VU "Ask" concerning the ability to substitute emission reductions for the requested 90% SO_2 reductions to be made at 167 specific electrical generating units, this was not an option provided with the low sulfur fuel oil strategy. Since Pennsylvania has not adopted a rule to lower the sulfur content of distillate fuel oil to the 15 ppm levels as specified in the MANE-VU "Ask," the progress report will not be amended to reflect that Pennsylvania has met this MANE-VU "Ask."

Comment 13: The City of Philadelphia enacted a law to require the use of 15 ppm distillate fuel oil, 2,500 ppm Number 4 fuel oil, and 5,000 ppm Number 5, 6 and heavier fuel oil, effective July 1, 2015. This low-sulfur fuel strategy is implemented and enforced by the Philadelphia Air Management Services, which is responsible for administering the state-approved local air pollution control program in Philadelphia County. (PADEP)

Response 13: The City of Philadelphia's law meets the MANE-VU "Ask " but it pertains only to fuel oil sold in the City of Philadelphia and does not affect fuel oils sold outside the city limits or elsewhere in the Commonwealth of Pennsylvania.

Comment 14: Pennsylvania commented that emissions from all sectors should be taken into consideration when evaluating emissions from the oil and gas production sector in Pennsylvania which accounts for a small portion of the total emissions from air contamination sources in the Commonwealth. By 2011, Pennsylvania has reduced its statewide emissions of NO_x by 265,035 tons, its emissions of Volatile Organic Compounds by 233,933 tons, its emissions of Sulfur Dioxide by 681,580 tons, and its emissions of Fine Particulate Matter by 24,224 tons since 2002. This downward trend in emissions is expected to continue in Pennsylvania. The significant improvements in visibility seen at the Brigantine Wilderness Area since 2002 are due, in part, to the significant SO_2 emission reductions in Pennsylvania.

Response 14: The improvements in visibility at the Brigantine Wilderness Area are due to the reductions in visibility impairing pollutants made by all of the states identified as contributing to visibility impairment in New Jersey. New Jersey, as part of the Regional Haze planning effort

through MANE-VU for the first Regional Haze SIP, anticipated that all states would have a lower amount of emissions of visibility impairing pollutants by 2018, as a result of the Clean Air Act controls either already in place or expected to be in place by 2018. Pennsylvania's projected emissions levels from the 2018 MANE-VU v.3 inventory are contained in the table below and, when compared to the 2011 emissions provided by the commenter, shows that more reductions from Pennsylvania is needed by 2018. New Jersey's 5-year progress report states the concern that increases in oil and gas drilling activities in Pennsylvania may increase emissions of visibility impairing pollutants and offset some of the emission reduction benefits achieved to date. Increasing emissions in Pennsylvania from oil and gas drilling (whether from conventional or unconventional natural gas drilling operations) may impact the downward trend in emissions of nitrogen oxides and sulfur dioxide in Pennsylvania as planned within New Jersey's Regional Haze SIP and could affect the continued progress to reaching the visibility progress goal in the Brigantine Wilderness Area as stated in the New Jersey's five-year progress report.

Table B-3: Pennsylvania's Emission Trends for Visibility Impairing Pollutants (in TPY)

Year	Oxides of Nitrogen (NO_x)	Volatile Organic Compounds (VOC)	Sulfur Dioxide (SO_2)	Fine Particulate Matter ($PM_{2.5}$)
2002	795,266	556,529	1,077,651	108,930
2011	530,231	322,596	396,071	84,706
Projected 2018	359,183	424,595	310,569	98,181
Emissions Difference (2018 – 2011)	171,048	-101,999	85,502	-13,475
2014 Increases in Unconventional Natural Gas Emissions since 2011	21,663	6,389	263	819

Positive numbers mean that emission reductions still need to be made.

Negative numbers mean that Pennsylvania has surpassed the anticipated emission reductions

Comment 15: In section 8.1 on page 41, the term "projected" is used twice in describing the 2018 MANE-VU inventory. (USNPS)

Response 15: The sentence was edited to remove the repeated word, "projected," from the sentence.

Comment 16: It is appreciated that in sections 8.2 (page 47) and 10 (page 51), the NJDEP recognizes the increased activity of horizontal drilling in the oil and gas sector in the MANE-VU region. The commenter encourages the EPA and MANE-VU states to improve the emissions inventories for the oil and gas sector. Even though there is no natural gas drilling activities in the State of New Jersey at this time, we request that NJDEP consider this emission sector as the State begins development of the next regional haze state implementation plan in 2018. (USNPS)

Response 16: Regional emissions inventories for 2011, 2018 and 2028 are expected to be developed as part of the Regional Haze SIP planning efforts. It is expected that the best available projections for the emissions from the oil and gas industry will be used in these inventories.

Comment 17: There actually are emissions from other sources in the oil and natural gas sector in New Jersey. According to the USEPA's 2011 National Emissions Inventory, version 2, there are emissions associated with oil and gas operations in New Jersey. However, the progress report does not consider the numerous sources like compressor station engines and pneumatic pumps that added to New Jersey's emissions inventory about 18 tons of SO_2, 1.35 tons of NOx, 0.1 tons of PM, and 0.3 tons from all industrial processes associated with the oil and gas sector in New Jersey. New Jersey should modify the report, including the footnotes 2, 44 [46] , and 47 [49], to address emissions from industrial processes associated with oil and natural gas production in New Jersey as reflected in the EPA 2011 NEI, version 2. These footnotes say that "there have been no drilling activities for natural gas in the State of New Jersey and, therefore, no emissions from this sector occur." (PADEP)

Response 17: The sentence from the report as referenced above is clear that there are no emissions occurring in New Jersey from the drilling for natural gas. There are oil and natural gas storage, pipeline and compressor stations that carry for delivery to end-users natural gas and oil throughout the State. The transfer and delivery of oil and natural gas requires equipment, like pumps, compressor stations and engines, to move material through a pipeline or to store oil or natural gas for eventual use. While emissions from the equipment used to move or store oil or natural gas does result in some emissions of air pollutants, the level of these emissions is extremely small in comparison to the thousands of tons of emissions that occur from the drilling for oil and natural gas in the Commonwealth of Pennsylvania. When compared to the emissions from New Jersey (as shown in the comment above) to the emissions from unconventional oil and gas drilling in Pennsylvania (as shown in Table B-3 of this document), New Jersey's emissions are a tiny fraction of Pennsylvania's emissions for every pollutant and are a very small component of New Jersey's entire emissions inventory that is not expected to grow substantially in the near future. Coincidentally, New Jersey is in the process of drafting a rule that would further reduce NO_x emissions from the engines and turbines at natural gas compressor stations. The report will not be modified to account for these extremely minor amounts of emissions that occur from the movement or storage of oil and natural gas in the State.

Comment 18: The emissions from unconventional natural gas operations in Pennsylvania are substantially lower than projected and as stated in New Jersey's 5-year progress report. The data presented in Comment 13 shows lower emissions from unconventional natural gas operations for 2014. (PADEP)

Response 18: The data for Pennsylvania's natural gas drilling emissions used in the report were obtained in the first version of the 2011 National Emissions Inventory, which subsequently has been replaced with better estimates. While varying estimates of emissions from both conventional and unconventional drilling are available, the conclusion of the report does not change with the new data provided. The conclusion is that continued progress to reaching the visibility progress goal in the Brigantine Wilderness Area could be impacted by the newly identified and expanding activity of horizontal oil and gas drilling occurring in other states, leading to increasing emissions of visibility impairing pollutants, potentially affecting air quality in New Jersey. Although New Jersey notes that the new data presented shows lower emissions, the report will not be changed to ensure the emission estimates for all states remains consistent within the report.

Comment 19: There are errors in Table 2.3, Change in Visibility from Baseline to Current Conditions for Brigantine Wilderness Area, and conflicts with Table 2.2 where the deciview levels on the best visibility days are listed as 12.3 versus 12.2 and the heading reads "2008-2013." (PADEP)

Response 19: The commenter is correct that these errors exist. Table 2.3 in the final report was modified to note the 2009 to 2013 five-year average visibility levels. Table 2.3 was also corrected to show the deciview levels for this period was 12.2 deciviews and not 12.3.